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Virtual reality in education

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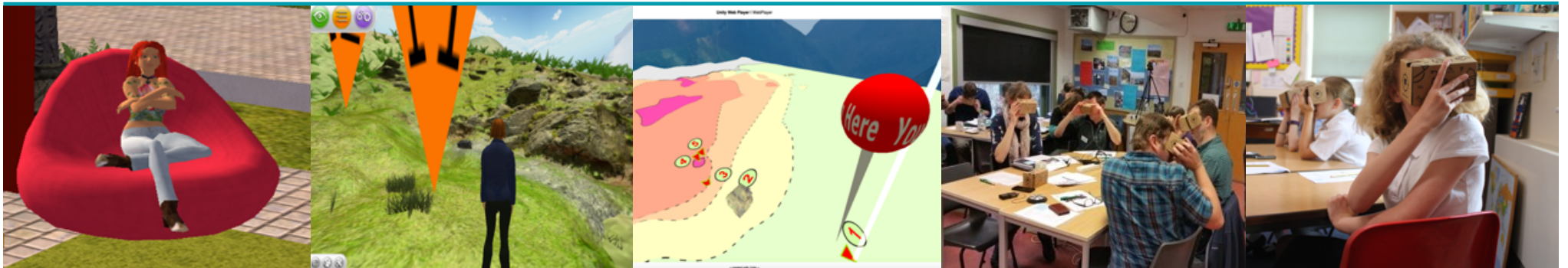
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Virtual reality in education

Shailey Minocha and Ana-Despina Tudor
20 September 2017



3D virtual environments and virtual reality



Second
Life



Virtual Skiddaw:
3D Geology Field
Trips (Unity 3D)



360-degree
videos in the
browser



Virtual reality
viewers

Mobility

‘As if I have met you’



“...I get a feeling of meeting you face-to-face...even though I engage with avatars, I am aware that behind them there is a real person...”

Realistic and non-realistic spaces

Realistic space



Non-realistic space



“ I think students can't deal with the whole space. Each learning scenario works if it is task oriented. Students obviously would need to know where to be and what is expected of them. ”

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Reconstructing reality



Preparing for the real world



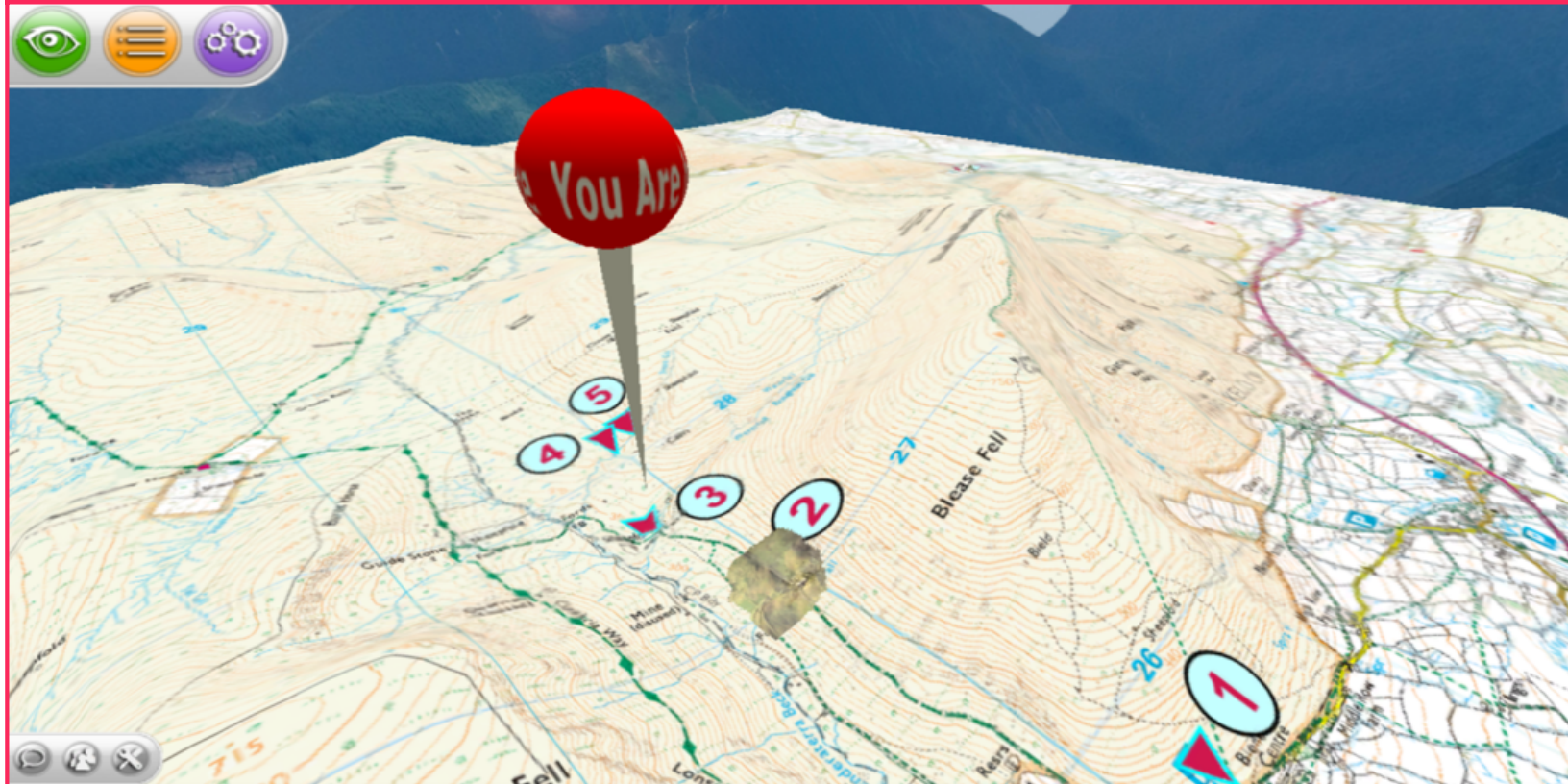
Lab in the field



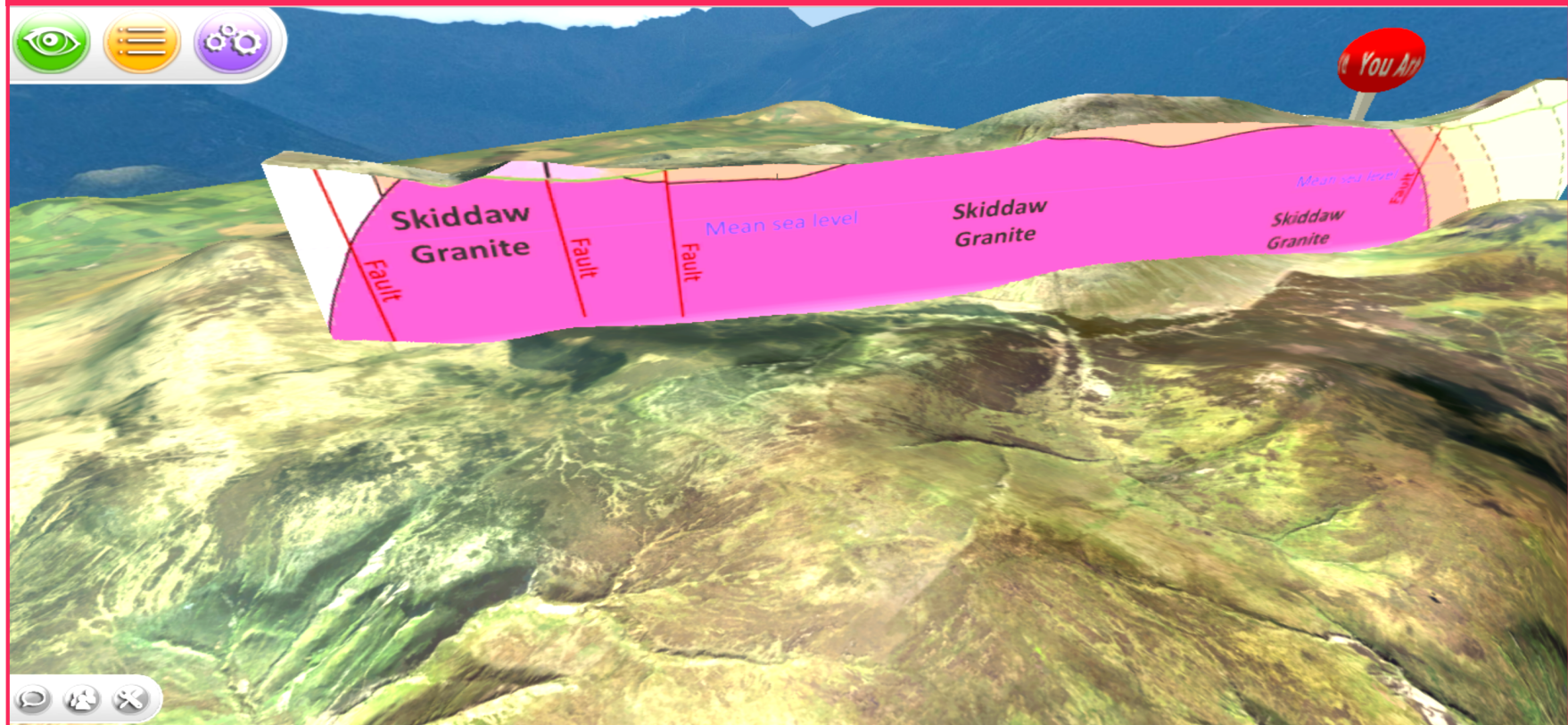
On-the-spot analysis



Beyond reality



Seeing what is there beneath our feet



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360-degree videos in the Chrome browser



VR in brain surgery

<https://www.youtube.com/watch?v=1H9qNaP0W9o>



Ocean: A 360-degree tour of the mysterious, magical corals of Palau;
The Economist

<https://www.youtube.com/watch?v=jvtvFHPRcsY>

3D virtual environments and virtual reality



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Life



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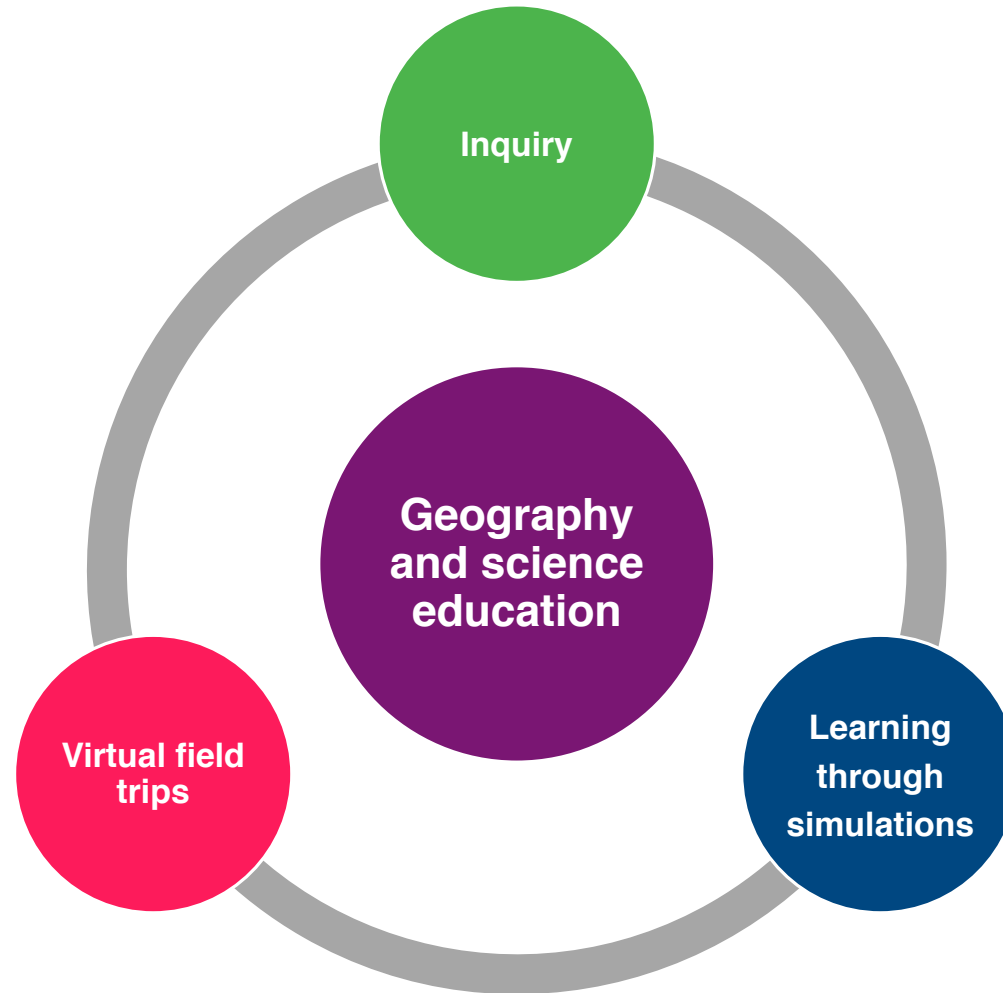
360-degree
videos in the
browser



Virtual reality
viewers

Mobility

Google Expeditions – mobile virtual reality



Empirical research

Lessons in schools

students (n=549)
year 4 to year 11
science (n=11)
geography (n=9)

Interviews

science teachers (n=11)
geography teachers (n=9)
curriculum experts (n=6)

Workshops

field workers (n=19)
educators (n=55)

Class preparation



Inquiry-based learning activity sheet

Tropical Rainforests

Activity 1: Now that you have looked at the Tropical Rainforests in Virtual Reality, please write down questions you have about the characteristics of Tropical Rainforests.

Why are certain plants found in rainforests? m.

Could some trees evolve and adapt to have transparent leaves so other plants get more sunlight? H.

How do some plants adapt so well and others don't? H.

Affordances



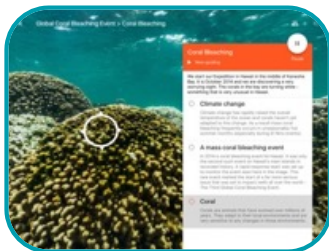
360-degree visual authenticity



360-degree navigation



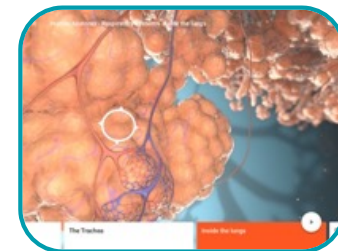
3D view



Emphasis and In-situ contextual information



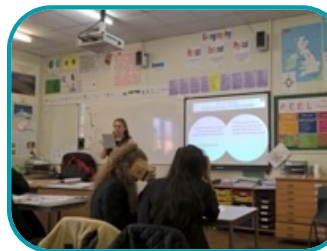
First-person perspective



Simulation



Single-user handling



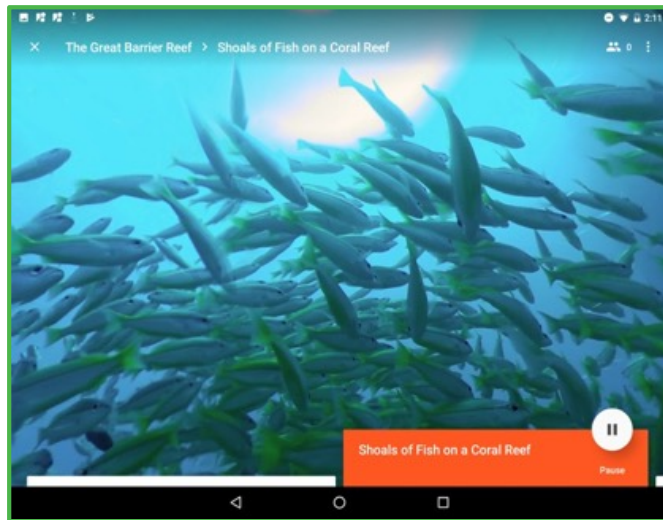
Synthesis



Visualisation

Experiencing the invisible

Real places



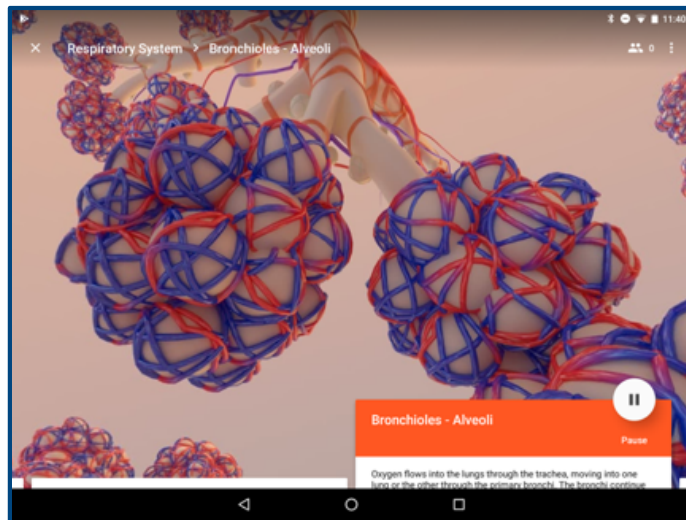
“

The virtual reality helped me because I could see for myself what was happening without having to imagine it.

”

Learning through simulations

Simulations



“ the animation was very realistic; therefore, I could take more knowledge away from the lesson [...] these images can [...] help me explain about the respiratory system in a much larger amount of detail. ”

Local to global – and – global to local

Local to global



Global to local



“ It helped me to understand the Chilterns is an area of natural beauty compared to some places in the world. It helped me to feel more caring about the Chilterns. ”

Employability

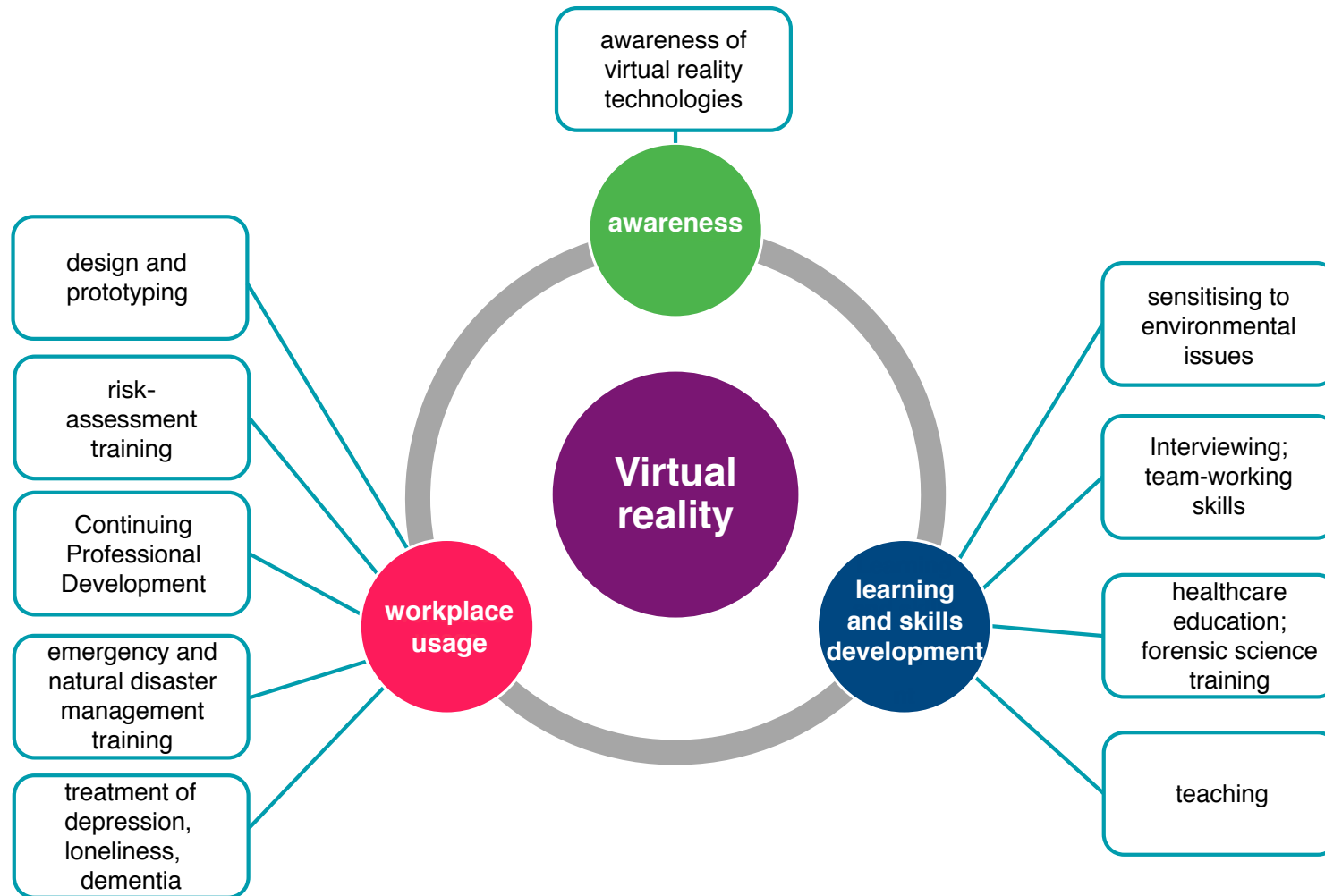
“ A set of capabilities and achievements that support students in developing their careers, raising their aspirations and enhancing their contribution to society. ”

The Open University Student Employability Policy Statement

Virtual reality and employability



Virtual reality and employability



The future

